

Amendments to the Specification: Please amend the substitute specification as indicated below.

[0019] This method starts from the machine-readable parameterized description of the field devices which is used on a control unit for controlling the field devices. Such a parameterized description is already known in the prior art and can, as indicated above, generally be interpreted directly by the control programs. In accordance with the invention, the parameters for the the field device, contained in the description, and the characteristics relevant for control purposes which are defined by the description, can be identified from the parameters concerned. These are the data type, the size, the set of permitted values or the permitted value range, as appropriate. In addition, for at least one of the identified parameters program modules, which can be executed by the field device's microprocessor, are generated for the field device's control equipment. First, it is possible to generate definition modules, which define for the parameter concerned certain segments of the storage means, the data type and/or the size. Secondly, access modules can also be generated which, for the parameter concerned, regulate the access by the control equipment to the associated storage segment, and which prompt the control equipment to execute other program modules when the parameter is accessed.

[0031] For the purpose of performing the control tasks which fall to the intelligent field device 2, certain program modules 11, referred to collectively as firmware, are brought to execution on the microprocessor 8 of the field device 2. The primary purpose served by this firmware is to control and read out from the field device's actuators and sensors 17. However, data, measured values and commands can also be stored here on storage module 18, which likewise belongs to the field device, and processed on the microprocessor in a manner prescribed by the firmware. It is clear that here again separate software must in principle be produced for each type of field device, generated with regard for the hardware components concerned and their functionality.

[0032] It is known how to generate 19 this firmware from the description of the field device 15 set down in text form. This program step is also subject to the same uncertainties as the conversion 16 of the text description 15 into the DDL 13. It is indeed true that the programmer of the firmware can fall back on existing (standard) program modules (so-called analog input blocks) for a large proportion of the software which needs to be produced. Equally, he is obliged to take into account, and incorporate into the program modules in the correct place, matters which are specific to the field device, which are laid down in the text format description 15. This familiar method has the following problem: it is essential that there is absolute consistency between the software blocks in the control computer 12 and in the firmware 11. Any disagreement²⁰ between these program blocks could lead to unforeseeable errors, some of which are exceptionally difficult to track down because they may only come to light under certain operating conditions of the field device or the control computer. The consequence is that, with the familiar prior-art methods, exceptionally comprehensive test phases must be carried out, before the newly-developed software can be considered as error-free, and thereby the field device reaches market-readiness. These problems are fundamentally due to the fact that two interpretation steps 16 and 19 are required, which are independent of each other.